(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
20 January 2005 (20.01.2005)

PCT

(10) International Publication Number
WO 2005/005639 A3

(51) International Patent Classification[7]: C12N 9/16

(21) International Application Number:
PCT/IN2004/000203

(22) International Filing Date: 9 July 2004 (09.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
882/DEL/2003 9 July 2003 (09.07.2003) IN

(71) Applicants *(for all designated States except US)*: **INDIAN COUNCIL OF MEDICAL RESEARCH** [IN/IN]; V. Ramalingaswami Bhawan, Ansari Nagar Post Box 4911, New Delhi 110 029 (IN). **UNIVERSITY OF DELHI** [IN/IN]; University of Delhi South Campus, Benito Juarez Road, New Delhi 110 021 (IN).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **TYAGI, Anil, Kumar** [IN/IN]; Department of Biochemistry, University of Delhi South Campus Benito, Juarez Road, New Delhi 110 021 (IN). **SINGH, Ramandeep** [IN/IN]; Department of Biochemistry, University of Delhi South Campus Benito, Juarez Road, New Delhi 110 021 (IN). **RAO, Vivek** [IN/IN]; Department of Biochemistry, University of Delhi South Campus Benito, Juarez Road, New Delhi 110 021 (IN). **RAMANATHAN, Vadakkuppattu, Devasenapathi** [IN/IN]; Tuberculosis Research Centre, Mayor V.R. Ramanathan Road Chetput, Chenai (IN). **PARAMASIVAN, Chinnambedu, Nainarappan** [IN/IN]; Tuberculosis Research Centre, Mayor V.R. Ramanathan Road Chetput, Chenai (IN). **NARAYANAN, Paranji, Ramaiyenger** [IN/IN]; Tuberculosis Research Centre, Mayor V.R. Ramanathan Road Chetput, Chenai (IN). **SINGH, Yogendra** [IN/IN]; Institute of Integrative Biology, Mall Road, Delhi 110 007 (IN).

(74) Agents: **HARIHARAN, Rajeshwari** et al.; K & S Partners, 84-C, C6 Lane off Central Avenue Sainik Farms, New Delhi 110 062 (IN).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

Published:

— *with international search report*

(88) Date of publication of the international search report:
12 May 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MUTANTS OF MYCOBACTERIA AND PROCESS THEREOF

(57) Abstract: The present invention provides mutant *Mycobacterium* strains harboring a modified tyrosine phosphatase gene (*mptpA or mptpB*) wherein the mutant *Mycobacterium* strain is incapable of expressing the active tyrosine phosphatase. The invention provides a method for developing the said mutant strain from either *Mycobacterium tuberculosis* or *Mycobacterium bovis*. The *mptpA* or *mptpB* gene may be modified by replacing the internal sequences with an antibiotic resistance marker gene, which disrupts the expression of the active gene. The invention further provides a recombinant vector comprising the modified *mptpA* or *mptpB* which may be used to develop the mutant strains of mycobacteria. The invention provides a method to assess the role of tyrosine phosphatases MptpA and MptpB in the virulence and pathogenesis of *Mycobacterium* which can be used as potential targets for developing anti-tubercular drug.

WO 2005/005639 A3